

USSR

UDC 621.384.6

GRCSS, L.F., IVANOV, G.M., MAKHENKO, L.A., SHAL'NOV, A.V.

"An Experiment On The Effect Of The Current Load Of A Waveguide Accelerating Structure"

V sb. Uskoriteli (Accelerators--Collection Of Works), No 12, Moscow, Atomizdat, 1970, pp 36-43 (from RZh--Elektronika i yeye primeneniye, No 12, December 1970, Abstract No 12A370)

Translation: The interaction of a succession of grouped clusters with the waveguide structure was experimentally studied under conditions of inequality of velocities of the accelerating wave and particles. The fourth section of the 360 Mev electron linear accelerator of the Physico-Technical Institute of the AS, Ukr SSR was used as a waveguide structure. During the experiment a method was used for shift of the dispersion curve of the waveguide structure by a change of its temperature. The signal induced by the beam in the waveguide structure was lead to the outside and measured with the aid of a linear detector, calibrated by a thermocouple. The dependence obtained of the intensity of the induced field on the frequency difference agrees with the theoretical curve within the limits of 5 percent. A direct inspection was conducted of a model representation of the pattern of the induced field transients at the beginning and at the end of a current pulse. An oscilloscopic analysis of the pulses confirmed the presence of amplitude and phase modulation of the radiation field in a transient regime. S.F.

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USSR

UDC: 535.373.2

GROSS, Ye. F. (Deceased), STAROSTIN, N. V., SHEPILOV, M. P., and SHEKHMAMET'YEV, R. I.

"Spectroscopic Investigation of Energy Levels of Bielectrons or Biholes in a Bismuth Iodide Crystal"

Moscow, Izvestiya Akademii Nauk SSSR--Seriya Fizicheskaya, No 4, 1973, pp 885-890

Abstract: This article is the continuation of work begun in an earlier paper (Gross, Ye. F, et al, Pis'ma ZhETF, 13, 1971, p 320) describing experimental research into exciton states in BiI_3 crystals in which a hydrogen-like series of resonance lines of radiation and absorption originating in the shortwave rather than the longwave spectral region was discovered. The results of further experimental work along this line are discussed in the present paper. The authors assert that the basic results of the experimentation can be interpreted if it is assumed that this series of lines is connected with a special type of optical transition in semiconductors, a transition between two electron zones, or two hole zones; it can be considered as a direct interzone transition
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USSR

UDC: 535.373.2

GROSS, Ye. F., et al, Izvestiya Akademii Nauk SSSR--Seriya fizi-
cheskaya, No 4, 1973, pp 885-890

accompanying the formation of a bielectron or bihole by analogy with the formation of an exciton for the case of ordinary zone-zone transitions between an upper valent zone and the conductivity zone. Absorption and luminescence spectra of the inverse series in BiI_3 crystals are shown. It is noted that, with better crystals and the use of a high-dispersion spectrometer, the terms of the inverse absorption series at temperatures of 1.6-4.2° K have doublet structures and a prediction made on the basis of the theory has been experimentally verified.

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USSR

GROSS, the late Ye. F., FEDOROV, D. L., and SHEKHMAVET'YEV, R. I., Leningrad State University imeni A. A. Zhdanov, Physicotechnical Institute imeni A. F. Ioffe of the Academy of Sciences USSR, Leningrad

"Effect of Uniaxial Deformation on Absorption Spectrum of Bismuth Iodide Crystals"

Leningrad, Fizika Tverdogo Tela, Vol 14, No 11, Nov 72, pp 3252-3255

Abstract: In previous articles the authors reported observing a hydrogen-like series of lines in the absorption spectrum of bismuth iodide crystals at 4.2°K which converge towards the long-wave side instead of the short-wave side, as usually the case. The frequencies ν_n of these lines obey the inverse serial relation of the hydrogen-like atom

$$\nu_n = \nu_\infty + \frac{R_1}{n^2}.$$

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GROSS, the late YE. F., et al., Fizika Tverdogo Tela, Vol 14, No 11, Nov 72, pp 3252-3255

The present article describes results of the further experimental study of the inverse series viz., the effect of directed, uniaxial elastic deformation of BiI_3 single crystals at 4.2°K on the absorption spectrum. Deformation of the crystal along the optical axis C_3 results in a shift of the absorption lines of the inverse series towards the long-wave side, together with a successive decrease in line intensity, beginning with the higher members of the series. At the same time, there is continuous deformation absorption moving from the short-wave side with a considerably higher (in absolute value) shift coefficient.

The authors thank N. V. STAROSTIN for discussing the results, V. T. AGEKYAN for his assistance and advice in the creation of a special-design press, and A. N. PAVLOV for taking part in the experiments.

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USSR

UDC: None

GROSS, Ye. F. (deceased), SOKOLOV, N. S., and TITKOV, A. N.

"Phononless Annihilation Radiation of Indirect Excitons in Germanium Crystals With Isoelectronic Impurities"

Leningrad, Fizika Tverdogo Tela, vol 14, No 7, 1972, pp 2004-2007

Abstract: The results are given of experiments performed to study the luminescence of indirect excitons in germanium crystals with isoelectronic admixtures of Si and Sn at a temperature of 4.2° K. The DFS-12 spectrometer with a PbS photoresistor was used as a receiver for recording purposes. The luminescence spectrum of a germanium crystal containing an isoelectronic Si impurity of 0.7 at. % and a small amount ($5 \cdot 10^{14}$ per cc) of Sb donor material, in which the radiation bands typical of germanium with no silicon are clearly indicated is shown. These bands are the result of the annihilation of free as well as bonded excitons with phonon excitation. The effect on the spectrum of increasing the sensitivity of the equipment and of adding silicon to the crystal specimens is also noted. Investigations were made of the luminescence of free germanium crystal excitons containing Sn, in which phononless annihilation of free excitons with elastic dispersion of the Sn atoms was observed

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GROSS, Ye. F., et al., Fizika Tverdogo Tela, vol 14, No 7, 1972, pp 2004-2007

The authors, associated with the A.F. Ioffe Physico-Technical Institute of Leningrad, express their gratitude to V. I. Safarov for his comments, to I. N. Belokurova and V. S. Zemskov for growing the Ge-Si crystals used in the experiments, and to Dr. V. Airo of France for preparing the germanium, tin-alloyed specimens.

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USSR

UDC: None

GROSS, Ye. E. (Deceased), STAROSTIN, N. V., SHEPILOV, M. E., and
~~SHEREMET~~ YEV, R. I.

"Fine Structure of the Energy Levels of a Bielectron or Bihole
in a BiI_3 Crystal"

Leningrad, Fizika Tverdogo Tela, vol 14, No 7, 1972, pp 1942-1947

Abstract: From the experimental discovery of an inverted series of hydrogen-like lines in BiI_3 crystals, it has been concluded that the phenomenon was caused by the formation of a bielectron a system of twin charged particles, electrons, or holes, with antiparallel spins. Further experimentation was conducted by the men named above, and the results of that experimentation are given in this paper. Included also are theoretical investigations into the spectroscopic characteristics of the two types of twin particles in poorly symmetrical BiI_3 crystals. Experimentally, it was found that in a DFS-13 spectroscope with a dispersion of about $2\text{\AA}/\text{mm}$ the BiI_3 spectrum had a fine structure and some of its lines were doublets, the distance between the doublet components varying inversely as the quantum number. The experiments
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GROSS, Ye. F. (deceased), et al., Fizika Tverdogo Tela, vol 14, No 7, 1972, pp 1942-1947

of the present paper also used more perfect crystals. In the theoretical part of the paper, the authors obtain an expression for the energies of the doublet components which indicates that the doublet splitting of the d-bielectron or bihole decreases with increasing line number according to the relation $1/n^2$. This agrees with the experimentally observed variation. The authors, members of the A. A. Zhdanov State University of Leningrad and the A. F. Ioffe Physico-Technical Institute of Leningrad, express their gratitude to N. Drugova, who participated in the experiments.

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USSR

UDC: None

~~GROSS, Ye. F.~~ (Deceased), PERMOGOROV, S. A., TRAVNIKOV, V. V., and
~~SEIFKIN, A. V.~~

"Kinetics of the Formation of Bonded Excitons in CdS Crystals"

Leningrad, Fizika Tverdogo Tela, vol 14, No 5, 1972, pp 1547-1548

Abstract: This brief communication is the sequel to an earlier article published by the authors named above in the same journal (vol 14, 1972, p 1388), in which they showed that the excitation of CdS crystals with a high probability of nonradiation recombination by monochromatic light creates monokinetic exciton distribution in the exciton zone. In the present communication an account is given of an investigation into the probability of formation of excitons bonded with neutral donors in CdS crystals as a function of the energy of the free excitons. The excitation spectra were obtained at a temperature of 4.2° K with equipment described in the earlier paper, and the results of their plot are shown.

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USSR

GROSS, YE. F., KREYNGOL'D, P. I., MAKAROV, V. L., Leningrad State University
imeni A. A. Zhdanov

"Resonance Interaction Between Ortho- and Paraexcitons in a Cu_2O Cuprous Oxide
Crystal With the Participation of Phonons"

Moscow, Pis'ma v Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, Vol. 15,
No. 7, 5 Apr 72, pp 383-386

Abstract: The exciton luminescence spectra of Cu_2O was studied to determine the frequencies of all optical phonons, including vibrations of Γ_{25}^+ active in Raman scattering. It is noted that in addition to the triple degenerate exciton state $n = 1$ of the "yellow" series with symmetry Γ_{25}^+ (orthoexciton), there should also exist in the Cu_2O crystal a nondegenerate state $n = 1$ with symmetry Γ_6^+ (paraexciton). Transitions only to levels of the orthoexciton Γ_{25}^+ which were resolved in the quadrupole approximation can be observed in luminescence and absorption spectra. The transition to the Γ_6^+ state is forbidden in the dipole and quadrupole approximation and therefore this state has not been observed up until this time. Several bands arising due to annihilation of the exciton with simultaneous excitation or disappearance of phonons are observed in the luminescence spectrum of Cu_2O along with resonance radiation of the exciton Γ_{25}^+ . Transition

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USSR.

GROSS, YE. F., et al, Pis'ma v Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, Vol. 15, No. 7, 5 Apr 72, pp 383-386

to the Γ_{25}^+ level with the participation of Γ_{25}^- , Γ_{12}^- , Γ_2^- , and Γ_{15}^- phonons is permissible in the dipole approximation. A table is given showing the frequency of optical phonons of cuprous oxide measured on the basis of luminescence spectra. In addition to phonon repetitions the table shows an additional radiation band which is located at a distance of about 180 cm^{-1} from the line of the orthoexciton and which has the characteristic shape of phonon repetition of the free exciton. The dependence of the luminescence intensity of this band on temperature is sharply different from the temperature dependence of the remaining phonons. It is also noted that phonon repetition with a frequency of 180 cm^{-1} is never encountered in the radiation spectrum of bound excitons of cuprous oxide. It is suggested that this band arises from the interaction of a phonon with another (not Γ_{25}^+) exciton state. Although the authors knew where the paraexciton level should be located, it could not be observed either in absorption or in luminescence. It was observed only in crystals subjected to deformation, and the new line appeared in the luminescence spectrum of Cu_2O under compression of the crystal along the C_4 axis of symmetry. It is concluded that the rise of the paraexciton line in the spectrum of cuprous oxide under deformation is due to resonance scattering of the orthoexciton through the level of the paraexciton with excitation of a phonon and subsequent radiative transition to the ground state.

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USSR

GROSS, Ye. F.; PERMOLOV, S. A.; et al (Joffe Physics-Engineering Institute, USSR Academy of Sciences, Leningrad)

"Spectroscopic Display of Free Exciton Lifetime"

Leningrad, Fizika Tverdogo Tela; May, 1972; pp 1366-95

ABSTRACT: The authors conducted a study of the spectra of exciton luminescence in CdS crystals with monochromatic excitation at temperatures of 4.2-77°K. It was discovered that in some samples the shape of the spectrum of exciton luminescence depends strongly on the frequency of the exciting light and contains lines shifted toward the long-wave side of the excitation lines by an amount equal to the energy of an integral number of longitudinal optical phonons. It was shown that such a characteristic of the luminescence spectra is caused by the nondetermination of the equilibrium distribution of excitons according to energy. The cause of the nondetermination of the equilibrium distribution in the exciton zone is the short lifetime of the free excitons as a result of the high probability of radiationless transitions. The non-equilibrium character of exciton luminescence is reflected also in the shape

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GROSS, Ye. F. PERMOCOROV, S. A., Fizika Tverdogo Tela, May 1972, pp 1388-95

of the excitation spectra of exciton luminescence. In crystals with short lifetimes of the free excitons the luminescence excitation spectra have a series of narrow maxima, the distance between which is equal to the energy of a longitudinal optical phonon. The position of the series of maxima in the excitation spectrum is determined by the energies of the exciton states, the annihilation of which is observed in the luminescence spectrum.

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USSR

GROSS, Ye. F., PLYUSHIN, A. G., SUSLINA, L. G., SHADRIN, Ye. B.

"Luminescence and Resonant Combination Scattering in $Zn_xCd_{1-x}Te$ Crystals"

Moscow, Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, Vol 15, No 6, 20 Mar 72, pp 312-315

Abstract: Resonant combination scattering in semiconductors has been the subject of a number of works. However, until now there have been no detailed investigations of the behavior of the intensity of the scattered light with a continuous change in frequency in the area of exciton absorption. This is the subject of the present article. The experiments were performed with a helium-neon laser at 4.2° K and 77° K. Concentration x in the specimens studied was varied between 0.4 and 0.5, corresponding to a change in the width of the forbidden zone from 1.905 to 1.965 eV at 4.2° K. The studies indicate that the resonant nature of combination scattering is related to excitation of free excitons in the mixed crystals studied.

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USSR.

GROSS, Ye. F., NOVIKOV, B. V., and SOKOLOV, N. S.

"Luminescence of Bonded Excitons in Germanium Crystals"

Leningrad, Fizika Tverdogo Tela, vol 14, No 2, 1972, pp 443-447

Abstract: Because little is known of the glow phenomena of germanium doped with elements of the III and V groups, this paper attempts to fill part of that gap by discussing the luminescence of exciton-doped complexes in germanium monocrystals alloyed with Sb, P, As donors and Ga, In acceptors. In the experiments, doping concentrations varied from $5 \cdot 10^{13}$ to $5 \cdot 10^{16}/\text{cm}^3$, and the device used for recording the luminescence was the screen spectrometer type DFS-12 with a photoresistive PbS as the sensor. Most of the measurements were made at a temperature of 4.2°K , attained by directly submerging the specimens in liquid helium, and an incandescent lamp or helium-neon laser was used to excite the luminescence. The authors, connected with the Semiconductor Institute

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GRÖSS, Ye. F. et al, Fizika Tverdogo Tela, Vol 14, No 2, 1972,
pp 443-447

of Leningrad and the A. A. Zhdanov Leningrad State University, express their gratitude to R. L. Korchazhkina for preparing the specimens, to S. A. Permogorov for discussing the results, and to V. V. Kulakov for his assistance in running the experiments.

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USSR

GROSS, Ye. F., PEREL', V. I., and SHEKHMAMET'YEV, R. I., Physicotechnical Institute imeni A. F. Ioffe, Academy of Sciences USSR, Leningrad State University imeni A. A. Zhdanov

"A Reverse Hydrogenlike Series in the Optical Excitation of Light Charged Particles in Bismuth Iodide (BiI_3) Crystal"

Moscow, Pis'ma v Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, Vol 13, No 6, 20 Mar 71, pp 320-325

Abstract: While making an experimental study of exciton states in BiI_3 crystal, the authors discovered a hydrogenlike spectrum -- a hydrogenlike series of resonance absorption and emission lines which converge in the long-wave region of the spectrum instead of the short-wave region, as usually happens. The article gives a brief description of the phenomenon and attempts to explain it by the light excitation of light charged particles with negative effective masses. The authors thank undergraduate student Ye. I. BALASHOV and postgraduate student I. I. MEL'NICHENKO for their assistance in the experiments.

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USSR

UDC: None

GROSS, Ye. F., SAFAROV, V. I., TITKOV, A. N., and SHLIMAK, I. S.

"Observation of Excited States and Experimental Determination of Energy Coupling in Indirect Excitons in Germanium"

Moscow, Pis'ma v Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, vol. 13, No. 7, 5 April 1971, pp 332-336

Abstract: This letter describes experimental research in the method of long-wave spectrum differentiation for determining exciton structure in the region of indirect absorption in germanium. This method is highly sensitive and, in addition to permitting observation of transitions of the excitons to the basic state with the participation of all four crystalline phonons (TA, LA, LO, and TO), will detect transitions from $n = 2$ to the excited state. As a result of this method, the value of the Rydberg exciton has been experimentally obtained and the coupled energy of the least level $E_{ex} = 0.0036 \pm 0.0003$ ev of the indirect exciton in germanium found for the first time. The differential spectra were obtained with a special spectrometer in which a rotating mirror, placed in front of the output slot of a monochromator and set to rotating at a rate of 73 Hz, produces a light beam modulated at that same frequency which is incident on the crystal and then is fed to a light sensor.

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Pharmacology and Toxicology

USSR

UDC 577.158.8

ROMASHINA, L. V., VOZNAYA, N. M., GROSSE, R., RAKHIMOV, M. M., and LUZIKOV, V. N., Laboratory of Bioorganic Chemistry, Moscow State University imeni M. V. Lomonosov, Moscow

"Mechanism of the Inactivation of the Respiratory Chain by Cobra Venom Phospholipase"

Moscow, Biokhimiya, Vol 37, No 6, Nov/Dec 72, pp 1204-1209

Abstract: The effects of phospholipase A isolated from the venom of the Central Asian cobra on the respiratory chain of the succinate dehydrogenase system of submitochondrial particles and the NADH oxidase complex (I + III + IV) reconstructed from the cytochrome of c-oxidoreductase (I + III) and the cytochrome of c-oxidase (IV) were studied. It was found that electron transfer was disturbed mainly at the level of cytochrome c in a link of the respiratory chain common to the NADH and succinate oxidase systems.

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AA0040711

UR 0482

Soviet Inventions Illustrated, Section I Chemical, Derwent, 1-70

243217 INTENSIFICATION OF HEAT EXCHANGE where the heat carrier used is an emulsion of non-conducting (dielectric) liquids with a conducting dispersed phase. The unequal conductivity increases the forces arising by passing a current, which in its turn leads to a greater heat exchange.

19.6.67 as 1169857/26-25. M. BOLOGA & OTHERS.

APPLIED PHYSICS INST. ACAD. SCIENCES MOLDAVIAN SSR.
(18.9.69) Bul 16/5.5.69. Class 421. Int.Cl.G 01k.

AUTHORS: Bologa, M. K.; Kozhukhar', I. A.; and Grosu, p. P.
Institut Prikladnoy Fiziki AN Moldavskoy SSR

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AUTHOR-- GROSUL, YA., PRESIDENT, MOLDAVIAN ACADEMY OF
SCIENCES, CORRESPONDING MEMBER OF THE ACADEMY OF
SCIENCES, U.S.S.R.

TITLE-- HORIZONS OF MOLDAVIAN SCIENCE

NEWSPAPER-- SOVETSKAYA MOLDAVIYA, FEBRUARY 27, 1970, P 2, COLS 1-4

ABSTRACT-- THE ARTICLE SUMS UP THE ACTIVITIES AND PROGRESS OF THE MOLDAVIAN ACADEMY OF SCIENCES.

AS OF TODAY THE INSTITUTES OF THE ACADEMY EMPLOY MORE THAN 2,000 PEOPLE INCLUDING A STAFF OF 711 SCIENCE ASSOCIATES, 35 OF WHOM ARE DOCTORS, 360 ARE CANDIDATES OF SCIENCES, 17 ARE ACTIVE MEMBERS OF THE ACADEMY, AND 20 ARE CORRESPONDING MEMBERS. THE NEWLY ELECTED ACADEMICIANS ARE N. P. FROLOV, YU. N. PETROVA AND M. F. YAROSHENKO.
V. V. ARASIMOVICH, D. D. VERDEREVSKIY, T. S. GEYDEMAN, I. TS. GOKHBERG,
V. G. KLIMENKO, A. M. LAZAREV, T. I. MALINOWSKIY, V. A. MOSKALENKO,
YU. YE. PERLIN, S. I. RADAUTSAN, AND G. YA. RUD. HAVE BEEN ELECTED CORRESPONDING MEMBERS OF THE ACADEMY.

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CONTRACTUAL RESEARCH DONE BY THE ACADEMY IN 1969 AMOUNTED TO 619,000 RUBLES. THIS REPRESENTS AN INCREASE OF 538,000 RUBLES OVER THE PERIOD OF THE LAST 5 YEARS.

NEW AREAS OF APPLICATION OF ELECTRIC POWER IN NATIONAL ECONOMY, AND STRUCTURAL AND PHYSICAL STUDIES OF SEMICONDUCTORS WILL RECEIVE SPECIAL ATTENTION IN RESEARCH PLANS FOR THE FORTHCOMING YEARS.

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1/3 015 UNCLASSIFIED PROCESSING DATE--11SEP70
TITLE--GLACIERS OF THE USSR AND THE STUDY OF THE BUDGET OF THEIR MASS--U-
AUTHOR--GROSVALD, M.G., KOTLYAKOV, V.M.
COUNTRY OF INFO--USSR
SOURCE--GEOFIZICHESKIY BYULLETEN', MOSCOW, 1970, NR 21, PP 3-17
DATE PUBLISHED-----70
SUBJECT AREAS--EARTH SCIENCES AND OCEANOGRAPHY
TOPIC TAGS--GLACIER, WATER, SOLAR ACTIVITY, HEAT BALANCE, WATER BALANCE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
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CIRC ACCESSION NO--AP0103165
UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0103165

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THERE ARE 4 MAJOR GLACIER REGIONS IN THE USSR: THE ATLANTIC ARCTIC, ATLANTIC EURASIAN, EAST SIBERIAN AND PACIFIC ASIAN, WHICH CAN BE DEVIDED INTO 19 SEPARATE GLACIER AREAS. THE TOTAL AREA OF THE GLACIERS IN THE COUNTRY AMOUNTS TO 81 900 KM PRIME2, AND THE VOLUME OF WATER STORED IN THEM, TO 13 750 KM PRIME3. THE MAIN CHARACTERISTIC FEATURES OF GLACIER REGIME, SUCH AS THE ELEVATION OF THE EQUILIBRIUM LINE, THE VALUE OF THE TOTAL ACCUMULATION AT THE EQUILIBRIUM LINE, THE VERTICAL GRADIENTS OF THE NET BALANCE, THE "GLACIER RATIOS" ETC., ARE ESTIMATED FOR THE MAJORITY OF THE GLACIER AREAS. THE DATA ON MASS BALANCE OF THE GLACIERS IN THE POLAR URALS AND TIEN SHAN ARE TABULATED AND COMPARED, WHICH WERE OBTAINED THROUGH THE DIRECT MEASUREMENT OVER THE LAST DECADE. IT HAS BEEN FOUND THAT THE GLACIER BALANCE CHANGES IN BOTH AREAS ARE NONSYNCHRONOUS. A COMPARISON OF THE VARIATIONS IN MASS BALANCES OF THE IGAN GLACIER (THE POLAR URALS) AND THE GREAT ALETSCHE GLETSCHER (THE SWISS ALPS), OVER THE PERIOD OF SEVERAL DECADES SUGGESTS THE CYCLIC TREND OF THE VARIATIONS IN BOTH REGIONS (WITH A WAVE LENGTH OF ABOUT 22 YEARS) AND THE DIRECT OPPOSITION IN THEIR PHASE.

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PROCESSING DATE--11SEP70

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CIRC ACCESSION NO--AP0103165

ABSTRACT/EXTRACT--THE ANALOGY OF 22 YEAR CYCLES OF THE BALANCE VARIATIONS WITH THE CYCLIC FLUCTUATIONS OF THE SAME WAVE LENGTH IN SOLAR ACTIVITY SEEMS TO BE QUITE EVIDENT, WHEREAS THE ATMOSPHERIC CIRCULATION APPEARS TO BE A MAIN INTERMEDIATE VARIABLE IN THE CHAIN "SUN GLACIERS" RESPONSIBLE FOR THE "CONTRA PHASE" RELATIONSHIP IN GLACIER VARIATIONS OF CERTAIN AREAS. IN CONCLUSION, SOME DATA ON THE PRESENT CHANGES IN GLACIER REGIME ARE GIVEN, AS WELL AS A GENERAL INFORMATION ON GLACIOLOGICAL STUDIES CARRIED ON IN THE USSR WITHIN THE FRAMEWORK OF THE IHD PROGRAMS. THE LATTER COVER THE COMPILING OF THE SOVIET UNION INVENTORY OF PERENNIAL SNOW AND ICE MASSES, THE CONTINUOUS MEASUREMENT OF GLACIER VARIATIONS, AND THE COMBINED RESEARCHES ON HEAT, MASS AND WATER BALANCES AT SELECTED MOUNTAIN GLACIER BASINS.

UNCLASSIFIED

UDC 669.1:621.873

USSR

GOGENKO, V. A., SHARONOV, G. YE., and GROSVAL'D, V. G.
"Devices for Weighing Metal in Steel Pouring Ladles During Extraction of a Melt
From an Open Hearth Furnace"

Proizvodstvo Chernykh Metallov [Production of Ferrous Metals--Collection of
Works], No 75, Metallurgiya Press, 1970, pp 52-56

Translation: The design of electrotensometric devices for weighing of metal in
a steel pouring ladle during extraction of the melt from an open hearth furnace
is described.

The scales consist of four water-cooled dosimeters installed on the stand
carrying the steel pouring ladle, an electrical attachment and a secondary in-
strument. The range of the device is 0 to 520 T. The error of the scale did not
exceed 1.25% of the maximum full scale reading in calibration on a 600 T hydrau-
lic press. The tensometric scales are installed on two stands.

Comparison of the results of weighing by tensometric scales with the results
of calculation of the theoretical mass of the metal (by volume) was performed.
The average deviation of mass from the theoretical value did not exceed the error
of calibration. 2 figures; 1 table; 1 biblio. ref.

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UDC 669.1:621.873

USSR

GOGENKO, V. A., SHARONOV, G. YE., and GROSVAL'D, V. G.

"Devices for Weighing Metal in Steel Pouring Ladles During Extraction of a Melt From an Open Hearth Furnace"

Proizvodstvo Chernykh Metallov [Production of Ferrous Metals--Collection of Works], No 75, Metallurgiya Press, 1970, pp 52-56

Translation: The design of electrotensometric devices for weighing of metal in a steel pouring ladle during extraction of the melt from an open hearth furnace is described.

The scales consist of four water-cooled dosimeters installed on the stand carrying the steel pouring ladle, an electrical attachment and a secondary instrument. The range of the device is 0 to 320 T. The error of the scale did not exceed 1.25% of the maximum full scale reading in calibration on a 600 T hydraulic press. The tensometric scales are installed on two stands.

Comparison of the results of weighing by tensometric scales with the results of calculation of the theoretical mass of the metal (by volume) was performed. The average deviation of mass from the theoretical value did not exceed the error of calibration. 2 figures; 1 table; 1 biblio. ref.

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UDC 533.92:621.039.61

USSR

(12)
ALEK SIN, V. F., BIRYUKOV, O. V., VISHNEVETSKIY, V. N., GEORGIYEVSKIY, A. V.,
GROT, Yu. I., DIKIY, A. G., ZISER, V. Ye., KITAYEVSKIY, L. KH., KONOTOP,
P. I., POGOZHEV, D. P., PELETNINSKAYA, V. G., SERGEYEV, Yu. F., SMIRNOV,
V. G., SUPRUNENKO, V. A., TOLOK, V. T., and TARAN, V. M.

"Development and Synthesis of the "Uragan" Stellarator and Investigation
of Magnetic Surfaces of High Shear"

Kiev, Fizika Plasmy i Problemy Upravlyayemogo Termoyadernogo Sinteza
(Plasma Physics and Problems in Controlled Thermonuclear Synthesis --
collection of works) "Naukova dumka," No 3, 1972, pp 73-112

Abstract: After an initial section devoted to a review of the literature
on the magnetic surfaces of toroidal stellarators and the principles of
stellarators in general, the authors analyze the "Uragan" specifically.
In particular, this paper is concerned with the problems involved in
choosing the parameters of the magnetic system for the racetrack stel-
larator to obtain magnetic surfaces with high shear. This last term is
defined as the extent of crossing of the magnetic lines of force. The
synthesis and adjustment of the magnetic system are also examined, and
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USSR

UDC 533.92:(01.03):61

ALEKSEIN, V. F., BIRYUKOV, O. V., VISHNEVSKIY, V. N., GEORGIEVSKIY, A. V., GROE, Yu. I., DIKIY, A. G., ZISER, V. Ya., KITATSKII, L. Kh., KONOTOP, P. I., POGOREEV, D. P., PELETNINSKAYA, V. G., SERGEYEV, Yu. P., SMIRNOV, V. G., SUPRENKO, V. A., TOLOK, V. T., TARAN, V. M.

"Development and Production of the Magnetic System of the 'Uragan' Stellarator and a Study of Magnetic Surfaces With Large Shear"

Fiz. plazmy i probl. uprav. termonukl. sinteza. Resp. nauchn. zh.
(Plasma Physics and Problems of the Controlled Thermonuclear Fusion.
Republic Interdepartmental Collection), 1972, No. 3, pp 73-112 (from
RZh-Fizika, No 11, May 72, Abstract No 116279)

Translation: This paper concerns the study of the magnetic system of the three-loop "Uragan" stellarator-reactor. Considerations concerning the selection of optimal parameters of the magnetic system of the stellarator are discussed. The equipment of the "Uragan" is briefly described. An experimental study of the magnetic surface, made with the aid of electron electron beams showed that in the "Uragan" stellarator-reactor with

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ALEKSIN, V. F., et al, Fiz. planny i probl. uprav. termoyad. sinteza.
Resp. mezhved. sb., 1972, No. 3, pp 73-112

individually controlled cylinders there are closed magnetic surfaces with high shear values (~ 0.09) and angle of rotational conversion ($\sim 240^\circ$). The experimental data are compared with calculated values obtained on the BESM-6 computer.

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USSR

UDC 621.382.13

GROTT, A. B."Controllability of Three Types of Semiconductor Delay Lines"

Kiev, Poluprovodnikovaya tekhnika i mikroelektronika, No. 5, 1971,
pp 82-88

Abstract: The controllability of germanium delay lines is investigated in this paper in a comparative estimate of the change in basic output parameters of three types of delay line construction, volume, surface, and diagonal, depending on the bias voltage applied to the base. The first type usually has positive controllability, in which the duration of the delay increases with increasing base bias. The second usually has two-sided controllability, where the effects vary with increasing bias. The third roughly combines the qualities of the first two. Curves showing how the delay time varies with bias voltage are given for all three types. The results of experiments performed primarily with specimens having low-resistance bases, with resistivities of 3 ohm-cm, are presented. Although all three types suffer from poor temperature stability, the author concludes that specimens having a base resistivity of 3 ohm-cm are preferable on that account. The author is associated with the Kiev Polytechnical Institute.

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UDC 621.382.13

USSR •

GROTE, A. M.

"Controllability of Three Designs of Semiconductor Delay Lines"

Kiev, Poluprovodnikovaya tekhnika i mikroelektronika, No 5, 1971, pp 82-88

Abstract: A study was made of the controllability of the delay of the output signal relative to the signal at the input of a germanium functional delay element as a function of the design. The advantages of the volumetric design of delay lines over surface and diagonal designs distinguished by the direction of interaction of the primary and controlling fields are demonstrated. A large part of the experiment was performed on models with a "low-resistance" base ($\rho = 3$ ohms-cm) according to the basic schematic of [Elektronika tverdogo tela, Edited by M. M. Nekrasov, Kiev, 1968].

The experimental results confirm the proposed physical model of transfer of the minority carriers in the base of the line with application of a controlling field. For all the investigated structural types of delay lines the maximum values of the controlling field of the base and the duration of the delay and, consequently, the range of controllability of germanium lines with respect to τ_{delay} are limited by the values of k_{π} (the transfer coefficient of the line with respect to voltage). The lower the permissible values of k_{π} , 1/2

USSR

GROTTE, A. M., Poluprovodnikovaya tekhnika i mikroelektronika, No 5, 1971, pp 82-88

the larger the values of U_{base} which can be used, resulting in higher controllability of the line under the given conditions.

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1/2 036 UNCLASSIFIED PROCESSING DATE--20NOV70
TITLE--FCST EFFECT ON HOT ELECTRONS IN SEMICONDUCTORS -U-
AUTHOR--GACYS, A. SH.
COUNTRY OF INFO--USSR
SOURCE--UKR. FIZ. ZH. (RUSS. ED.) 1970, 15(2), 334-6
DATE PUBLISHED-----70
SUBJECT AREAS--PHYSICS
TOPIC TAGS--SEMICONDUCTOR MATERIAL, ELECTRON GAS, HEATING, ELECTRIC FIELD,
WEAK MAGNETIC FIELD, ELECTROMAGNETIC WAVE FREQUENCY, ACOUSTIC
SCATTERING, PHONON SCATTERING
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1998/0551 STEP NO--UR/0185/70/015/002/0334/0336
CIRC ACCESSION NO--AP0121223
UNCLASSIFIED

2/2 036
CIRC ACCESSION NO--AP0121223

UNCLASSIFIED

PROCESSING DATE--20NOV70

ABSTRACT/EXTRACT--(U) GP-C- ABSTRACT. THE INFLUENCE OF THE ELECTRON GAS HEATING IN A STATIC ELEC. FIELD ON THE FOGT EFFECT IS CONSIDERED. THE ELEC. WAVE FIELD IS ASSUMED WEAK IN COMPARISON WITH THE HEATING FIELD; THE MAGNETIC FIELD IS ALSO ASSUMED WEAK AND THE ELEC. MAGNETIC WAVE FREQUENCY LOW. THE CASE OF THE NONDEGENERATE SEMICONDUCTOR WITH A PARABOLIC CONDUCTION BAND AND AN ISOTROPIC EFFECTIVE MASS IS TREATED. IN THE CASE OF SCATTERING BY THE ACOUSTIC PHONONS, THE PHASE DIFFERENCE OF THE FOGT EFFECT Φ_{H-L} SUBO SIMILAR TO $1-T$ SUBE PRIME2, (T SUBE IS THE ELECTRON TEMP.), WHILE IN THE CASE OF SCATTERING BY THE POLAR OPTICAL PHONONS Φ_{H-L} SUBO SIMILAR TO T SUBE PRIME2. FACILITY: MOSK. INST. STAL SPLAVOV, MOSCOW, USSR.

UNCLASSIFIED

1/2 021 UNCLASSIFIED PROCESSING DATE--3000170
TITLE--ELECTRON TEMPERATURE AND MOBILITY IN i -B-VIA SEMICONDUCTOR
COMPOUNDS WITH A NONPARABOLIC CONDUCTION BAND -U-
AUTHOR--GROYS, A.SH.
COUNTRY OF INFO--USSR
SOURCE--UKRAINS'KII FIZICHNII ZHURNAL, VOL. 15, MAK. 1970, P. 421-424
DATE PUBLISHED----MAR 70
SUBJECT AREAS--PHYSICS
TOPIC TAGS--ELECTRON TEMPERATURE, ELECTRON MOBILITY, SEMICONDUCTOR
MATERIAL, CONDUCTION BAND
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1998/0559 STEP NO--UR/0135/70/015/000/0421/0424
CIRC ACCESSION NO--AP0121231
UNCLASSIFIED

2/2 021

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0121231

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. INVESTIGATION OF PIEZOAACOUSTIC SCATTERING OF ELECTRON IN IIB-VIA SEMICONDUCTOR COMPOUNDS HAVING A KANE (1957) TYPE NONPARABOLIC DISPERSION LAW, IN THE PRESENCE OF A STRONG ELECTRIC FIELD. ELECTRON TEMPERATURE AND MOBILITY ARE CHARACTERIZED AS FUNCTIONS OF THE ELECTRIC FIELD. THE HOT ELECTRON ESCAPE EFFECT IS SHOWN TO DISAPPEAR WITH THE CONSIDERED SCATTERING MECHANISM AT A ZERO VALUE OF THE NONPARABOLICITY PARAMETER. FACILITY: MOSKOVSKII INSTITUT STALI I SPLAVOV, MOSCOW, USSR.

UNCLASSIFIED

Acc. Nr: **AP0044195**

Ref. Code: UR 0239

PRIMARY SOURCE: Fiziologicheskiy Zhurnal, 1970, Vol 56,
Nr 1, pp 102-107

INVESTIGATION INTO SECONDARY PERISTALSIS IN VARIOUS PARTS
OF ESOPHAGUS IN DOG

Bogach, P. G.; Krasil'shchikov, K. B.; Groysman, S. D.

From the Institute of Physiology, T. G. Shevchenko State University, Kiev

In spite of the different character of the motor reactions in various parts of the esophagus to mechanical stimulation the frequency of the secondary peristalsis in all parts of the dog esophagus was shown to be the same, viz. 8-14 contractions a minute.

The frequency of the peristalsis in esophagus appears to be unchanged with the increase of the stimulating balloon volume by 4 times (10-40 ml.). Only the strong mechanical stimulation of esophagus which evoked pain depressed the secondary esophageal peristalsis. The excitability of esophagus to mechanical stimulation had a tendency to increase in distal direction.

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REEL/FRAME
19770681

USSR

UDC 621.791.92

GROZDANOV, P. K., Candidate of Technical Sciences, and SAVOV, I. N., Engineer (Scientific-Research, Design-Construction, and Technological Institute of Welding and Foundry Engineering, Bulgaria); GRABIN, V. F., Candidate of Technical Sciences, ZELENIN, V. I., Engineer, DUDKO, D. A., Corresponding Member, Academy of Sciences Ukrainian SSR, MAKSIMOVICH, B. I., Candidate of Technical Sciences, and NETESA, I. V., Engineer (Institute of Electric Welding imeni Ye. O. Paton, Academy of Sciences Ukrainian SSR)

"Structure and Properties of a Composite Alloy for Surfacing"

Kiev, Avtomaticheskaya Svarka, No 2, Feb 74, pp 28-31

Abstract: The results of studying the structure and properties of a composite surfacing alloy of poured tungsten carbides and manganese German Silver MNMts20-20, containing 20% Ni, 20% Mn, balance -- copper, are presented. Alloy samples were prepared by three methods of surfacing: impregnation with a liquid alloy-lubricant and furnace heating, argon-arc welding with a tungsten electrode, and gas-flame welding. The alloys prepared by these methods were characteristically dense without the presence of slag inclusions, cracks, and other defects with almost complete preservation of the shape and properties of the tungsten carbide grains. Wear resistance of the composite alloy under the simultaneous action of tight and loose abrasives and a load on the sample

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USSR

GROZDANOV, P. K., et al., Avtomaticheskaya Svarka, No 2, Feb 74, pp 28-31

of almost 60 kg/cm^2 is 60 times higher than for steel St. 3. In abrasion tests using sand, corundum, and boron carbide abrasives, the composite alloy exhibited the least amount of wear in comparison with steels St. 3 and G13 and hard alloys VK8 and T15K6. Four figures, one bibliographic reference.

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USSR

UDC 577.391:547.476

GROZDOV, S. P., BEZIN, G. I., KENDYSH, I. N., KIR'YANOV, I. Yu., and
VASIL'YEVSKAYA, V. V., Institute of Biophysics, Ministry of Health USSR,
Moscow

"Mechanism of the Physiological Action and of the Radiation-Protective
Effect of Dimethylsulfoxide"

Moscow, Radiobiologiya, Vol 11, No 4, Jul/Aug 71, pp 522-527

Abstract: Dimethylsulfoxide (DMSO), on being administered intraperitoneally to rats in the form of a 50% aqueous solution in a dose of 5.4 g/kg before irradiation of the animals with gamma-rays in a dose of 900 r, exerted a pronounced radiation-protective effect, which was considerably enhanced by the administration of ATP. DMSO reduced the action of corticosteroids on tissues, although it increased their secretion in the organism. Reduction of the utilization of O_2 , inhibition of glycolysis, and other effects indicated inhibition of metabolic processes in lymphoid tissues (the spleen and thymus) under the action of DMSO. As distinguished from other radiation protectors, DMSO did not produce hypoxia, increase the content of SH groups, or lower the redox potential in tissues. Differences between the mechanism of action of DMSO and that of aminothiols explain the enhancement of the

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USSR

GROZDOV, S. P., et al., Radiobiologiya, Vol 11, No 4, Jul/Aug 71, pp 522-527

radiation-protective effect upon their joint application. As indicated by the results of the experiments with ATP, this enhancement will presumably also be observed on joint administration of DMSO with other substances which, similarly to aminothiols, displace the redox balance of the organism towards reduction.

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Acc. Nr: AF0037243

Ref. Code: UR 0301

PRIMARY SOURCE: Voprosy Meditsinskoy Khimii, 1970, Vol 16,
Nr 1, pp 87-90

THE STUDY OF FATTY ACID OXIDATION IN HEART MUSCLE OF NORMAL ANI-
MALS AND AT EXPERIMENTAL MYOCARDITIS

I. L. Boboshko, M. D. Grozdova

Institute of Pharmacy USSR Academy of Medical Sciences

The oxidation of butyric and palmitic acids by rabbit heart mitochondria was studied. The oxidation of butyric acid as distinct from palmitic acid does not depend on carnitin addition into the incubation mixture. The rate of butyric acid oxidation is depended on the season of the year. At the experimental adremaline myocarditis the inhibition of fatty acid oxidation by 2-3 times was noted.

D.A.

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REEL/FRAME
19730170

1/2 026 UNCLASSIFIED PROCESSING DATE--13NOV70
TITLE--SYNTHESIS AND STUDY OF THE ANISOTROPY OF POLARIZABILITY AND DIPOLE
MOMENTS OF SOME COMPOUNDS OF THE ENDOXOCYCLOHEXANE SERIES -U-
AUTHOR--(04)-VERESHCHAGIN, A.N., GROZINA, L.A., KHAMATULLINA, I.M.,
ARBUZOV, B.A.
COUNTRY OF INFO--USSR
SOURCE--IZV. AKADE. NAUK SSSR, SER. KHIM. 1970, (4), 792-7
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--ANISOTROPY, DIPOLE MOMENT, ORGANIC SYNTHESIS, CYCLOHEXANE,
FURAN, OXIDATION, PHTHALIC ACID, EPOXY COMPOUND, DIELECTRIC PROPERTY,
NITRILE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3006/1003 STEP NO--UR/0062/10/000/094/0192/0797
CIRC ACCESSION NO--AP0134/15
UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--13NOV70

2/2 026

CIRC ACCESSION NO--AP0134715

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. CONVENTIONALLY PREPD. DIELS ALDER ADDUCTS OF FURAN WERE OXIDIZED WITH HCO SUB2 H,H SUB2 O TO TRANS,1,2,DICYANO,4,5,EPOXY,3,6,ENDOXCYCLOHEXANE, M. 124-6DEGREES, AND THE CIS ISOMER, M. 123-4DEGREES, WHOSE DIPOLE MOMENTS, FROM DIELEC. DATA, WERE, RESP., 2.92 AND 5.62 D. THE FOLLOWING DIPOLE MOMENTS AND KERR CONSTS. (M PRIMEKX1012), RESP., WERE REPORTED: 3,6 ENDOXD,DELTA PRIME4,TETRAHYDROPHTHALIC ANHYDRIDE, 5.53, NEGATIVE 99.6; TRANS,1,2,DICYANO,3,6,ENDOXD,4,CYCLOHEXENE, 3.18, 65.8; CIS ISOMER, 5.55, 463.7; TRANS,1,3,DICYANO,4,5,EPOXY,3,6,ENDOXCYCLOHEXANE, 2.92, NEGATIVE 31.8; CIS ISOMER, 5.62, 404.2; AND 4,5,EPOXY,3,6,ENDOXDHEXA,HYDROPHTHALIC ACID, 4.03 NEGATIVE. OXIDN. OF DIELS ALDER ADDUCTS OF FURAN WITH DINITRILES YIELDS EXO EPOXY DERIVS. FACILITY: KAZAN. GOS. UNIV. IM. UL'YANOVA-LENINA, KAZAN, USSR.

UNCLASSIFIED

Acc. Nr: **AP0036811**

Ref. Code: UR 0016

PRIMARY SOURCE: Zhurnal Mikrobiologii, Epidemiologii, i
Immunobiologii, 1970, Nr 1, pp **26-30**

CULTIVATION OF SALMONELLAE OF TYPHOID FEVER
ON SYNTHETIC NUTRIENT MEDIUM

I. M. Gruber, V. V. Biryukov, K. D. Gnuni, F. I. Aptekareva

The authors modified the full value amino acid medium by replacement of triptophane with its precursor — indol (0.1 g/l), and of asparagic acid — with urea (0.86 g/l). By the indices of reproduction the modified nutrient medium was not inferior to the initial, but was even somewhat superior to it by growth indices. Replacement of the two deficient expensive amino acids offered a possibility of cutting in two the cost of the nutrient medium.

A method of orthogonal Latin rectangles was used in this work; it offered a possibility of establishing the range of changes in the concentration of components, capable of providing the optimal rate of reproduction of typhoid bacilli, by a small number of experiments.

D.M.

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1/2 008 UNCLASSIFIED PROCESSING DATE--13NOV70
TITLE--PURIFICATION OF ORGANIC CHLOROSILANES -U-
AUTHOR--(05)-KLEBANSKIY, A.L., GRUBER, V.N., KRUGLOVA, G.A., KARLIN, A.V.,
LOBKOV, V.D.
COUNTRY OF INFO--USSR
SOURCE--USSR 265,884
REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI 1970,
DATE PUBLISHED--17MAR70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--CHEMICAL PATENT, ORGANIC SILANE, CHLORINATION, DISTILLATION,
CHEMICAL PURIFICATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--3002/1480

STEP NO--UR/0482/70/000/000/0000/0000

CIRC ACCESSION NO--AA0128879

UNCLASSIFIED

2/2 008

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AA0128379

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE TITLE COMPODS. ARE PURIFIED BY CHLORINATION WITH THE AID OF UNSATD. ORGANOCHLOROSILANES, E. G. METHYLVINYL-DICHLOROSILANE, FOLLOWED BY FRACTIONAL DISTN. OF THE FINAL PRODUCT. THE STILL RESIDUES FROM THE FRACTIONAL DISTN. OF METHYLVINYL-DICHLOROSILANE (CONTG. VINYL GROUPS) CAN BE USED AS THE CHLORINATING AGENT.

UNCLASSIFIED

1/2 023
TITLE--LATEX ARTICLES -U-

UNCLASSIFIED

PROCESSING DATE--20NOV70

AUTHOR--(C2)--MAYZELIS, B.A., GRUBMAN, YU.V.

COUNTRY OF INFO--USSR

SOURCE--USSR. 265,433

REFERENCE--UTKRYTIYA, IZOBRET., PROM. OBRATZSY, TOVARNYE ZNAKI 1970,
DATE PUBLISHED--OSMAR70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--LATEX, CHEMICAL PATENT, EPOXY RESIN, ELECTRIC CURRENT,
INSULATING MATERIAL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--3002/1427

STEP NO--UR/0482/70/000/000/0000/0000

CIRC ACCESSION NO--AA0126826

UNCLASSIFIED

2/2 023

UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AA0126826

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. LATEX ARTICLES ARE PREPD. BY
PLUNGING THE MOLDS INTO A FIXATIVE AND THE LATEX AND THEN TURNING ON A
CONST. ELEC. CURRENT. AN INSULATING LAYER, E.G. AN EPOXY RESIN, IS
APPLIED ON THE SURFACE OF THE CURRENT CONDUCTING MOLD IN PLACES WHERE
THE MOLD IS NECESSARILY THIN. FACILITY: SCIENTIFIC RESEARCH
INSTITUTE OF RUBBER AND LATEX ARTICLES.

UNCLASSIFIED

USSR

UDC: 621.317.335.3

GRUBNIK, N. N., ULINICH, R. B., TUCHINSKIY, A. M.

"Principle of Operation of an Installation for Measuring ϵ and $\tan \delta$ of Heat Resistant Insulation in the 400-3000 Hz Frequency Range at Voltages of up to 10 kV, and a Measurement Procedure"

Tr. Mosk. elektrotekhn. in-ta svyazi (Works of the Moscow Electrical Engineering Institute of Communications), 1970, vyp., pp 178-183 (from Radio-Radiotekhnika, No 11, Nov 70, Abstract No 11A307)

Translation: The authors point out the drawbacks of existing equipment which preclude measurement of the properties of dielectrics simultaneously at high voltages (up to 10 kV) and high frequency (up to 3 kHz). A measurement method is proposed which is based on using phase relationships in a resonance circuit assuming excitation from a current generator. The resonance circuit in the device combines the functions of the fundamental element of the measurement circuit and those of a high-voltage generator (transformer). The circuit of the installation is given together with the fundamental relationships in the circuit. The results of the studies are exemplified by graphs of $\tan \delta$ as a function of voltage at various temperatures and for specimens of two dielectrics at a frequency of 1.2 kHz. Three illustrations. E. L.

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GRUBOV, V. I.

CHETNICAL CYBERNETICS

A Preliminary Approach to Process

Automation

A. ZINURSKIY - Candidate of Technical Sciences, V. I.

Professor for Scientific Work, Kiev University

V. I. GRUBOV - Candidate of Technical Sciences, V. I.

Associate of Technical Sciences, Director, Laboratory of Chemical

Chemistry

Engineer/Consultant

Copy to CIA

66

Secret - Chemical Process, Sept 1973

University science in the past was rarely known to deal with the solution of specific applied problems. But, life has made significant amendments to the viewpoint of "greater and lesser science." At present, universities with strong scientific potential, many Academy and industry scientific research institutes, design bureaus, and higher educational institutions are turning their efforts to solve the far-reaching tasks set down by the Twenty-fourth Party Congress.

We shall illustrate the importance of these relationships, using Kiev State University's chemical cybernetics research laboratory as an example. Personnel there are working on problems dealing with the mathematical and economic analysis of chemical technology processes in various branches of industry. The ultimate goal of the research is to determine prospects and methods for developing specific automated systems for controlling technological processes.

Having analyzed the status and prospects for the introduction of automated systems for controlling technological processes in the chemical, petroleum refining, food, pulp and paper industries, as well as in other industries of the Ukrainian SSR, scientists formulated a number of technical, mathematical, socio-economic, and organizational tasks which must be solved in the very near future.

Computer equipment now operates at many enterprises. In the development of automated systems for controlling technological processes, we will

Translation of extracts from the article "Elektronika Avtomata" ("Soviet Union State Herald") in the newspaper "Sovetskoye Tekhnicheskoye Industriy" (March 22, 1973, p. 2) translated from the Russian by Henry Agnew.

1/2 007 UNCLASSIFIED PROCESSING DATE--02 OCT 70
TITLE--MULTIDIMENSIONAL, DETERMINATIVE SELF INSTRUCTED CONTROL SYSTEM WITH
A SINGLE STEP SEARCH FOR THE OPTIMUM FOR COMPLEX CHEMICAL PROCESSING -U-
AUTHOR--(02)-GRUBOV, V.I., RADCHENKO, I.F.

COUNTRY OF INFO--USSR

SOURCE--KHIM. PROM. UKR. 1970, (1), 32-5

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--CALCINATION, COMPUTER APPLICATION, SODIUM CARBONATE, AUTOMATIC
CHEMICAL PROCESS CONTROL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1990/1306

STEP NO--UP/0436/70/000/001/0032/0035

CIRC ACCESSION NO--AP0107399

UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--0200170

2/2 007

CIRC ACCESSION NU--AP0109390

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. COMPUTER OPTIMIZATION OF CHEM.
PROCESSES IS DISCUSSED; THE APPROACH TAKEN IN OPTIMIZING THE NA SUB2 CO
SUB3 CALCINATION PROCESS IS OUTLINED. FACILITY: VYSCHISL,
TSENTR, KIEV. GDS. UNIV., KIEV, USSR.

UNCLASSIFIED

Acc. Nr:

AP0048939

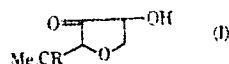
Abstracting Service:

CHEMICAL ABST. 5-78

Ref. Code:

4180079

99850y Acid-base equilibriums of tetrahydroaminoxyhydroxy-furanones in water-alcohol solutions. Gruchenkov, R. G.; Skorokhod, O. R.; Tishchenko, I. G. (Beloruss. Gos. Univ. im. Lenina, Minsk, USSR). *Zh. Obshch. Khim.* 1970, 40(1), 171-6 (Russ). Acid-base equil. was studied of I (R = piperidino, NMe₂, or NEt₂), by following the changes in absorption spectra of I at pH 1.78-6.74. All 6 possible structural forms of I take part in the equil. involving H⁺ transfers and tabulation was made for I at various pH in terms of distribution of the co-



present forms under the acid-base equil. conditions. The values of the estd. equil. consts. for these forms increase in order C₂H₅N, Me₂N, Et₂N and were tabulated for pH 2-11.

G. M. Kosolapoff

REEL/FAME
19800711

USSR

UDC: 62-55

VORSHEVSKIY, A. V., GRUDEN', O. K.

"A Method of Obtaining Constant Lead Time With Monitoring of Slip in an Automatic Synchronizer"

USSR Author's Certificate No 316153, filed 8 May 70, published 1 Nov 71
(from RZh-Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 9,
Sep 72, Abstract No 9A186 P)

Translation: A method is known for obtaining a constant lead time with monitoring of slip in an automatic synchronizer. The disadvantages of this method are the relatively small maximum permissible angle of lead, low accuracy of maintaining a constant lead time when there is a change in the magnitude and sign of slip, and the complexity of realizing monitoring of slip. As a distinguishing feature of the proposed method, to improve accuracy and reduce complexity each of the variable voltages to be synchronized is algebraically added to a constant voltage whose magnitude and sign depend on the magnitude and sign of slip, pulses are shaped (e. g., by means of a flip-flop with peak transformer at the output), and the output element of the synchronizer is acted on if there is time coincidence of the above-mentioned pulses.

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USSR

UDC 621.771.23

GRUDEV, A. P., ZIL'BERG, Yu. V., and BONDARENKO, V. A., Dnepropetrovsk
Metallurgical Institute

"Effect of the Metal's Temperature on the Coefficient of Friction in Cold
Rolling"

Moscow, Izvestiya Vysshikh Uchebnykh Zavedeniy, Chernaya Metallurgiya, No 1,
1971, pp 80-81

Abstract: Earlier papers dealing with friction in cold rolling have failed to take into account the role of the temperature factor, although the temperature of the metal sometimes rises to 250-300° C, which drastically affects the properties of lubricants. This study discusses the effect of the metal's temperature on the friction factor in cold rolling within 20-250° C. The lubricants were castor and spindle oils. The experiment involved specimens of 08 kp work-hardened steel rolled on a duo mill on hardened steel rolls 191.1 mm in diameter at a reduction in area of 10%. The effectiveness of lubricants was found to be greatly affected by the temperature of the metal being rolled. The extent to which the friction factor was affected by temperature appears to depend on the viscosity of

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USSR

GRUDEV, A. P., et al, Izvestiya Vysshikh Uchebnykh Zavedeniy, Chernaya Metallurgiya, No 1, 1971, pp 80-81

the lubricant. The increase in the friction factor with the temperature of the metal is due to the decrease in the layer of lubricant in the area of deformation.

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- 84 -

Pathology

USSR

BURNASHOV, V. S., and GRUDEV, F. I., Chair of Psychiatry, Semipalatinsk Medical Institute

"Subpsychotic and Psychic Disorders in Brucellosis"

Alma-Ata, Zdravookhraneniye Kazakhstana, No 8, 1972, pp 35-36

Abstract: In brucellosis, as in many other infectious diseases, psychic disorders often develop along with somatic pathology. Among such manifestations as torpidity, apathy, adynamia, and indifference, the most prominent are melancholy and anxiety. Subpsychoses and abortive psychoses are suddenly, spontaneously discontinued developments of grand psychoses. The most characteristic syndromes are asthenic (25% of 282 brucellosis patients observed), dysthymic (18%), hypochondric (14%), and diencephalic (13%). Grand psychoses may develop acutely, subacutely, and gradually and may be classified as delirious and amental-delirious syndromes, amental state, hallucinosis, asthenic-dysthymic state, and hallucinatory-paranoid syndrome. They take a periodic course and last for 3 to 8 and more months, and the various phases are brief and blend into each other at a random sequence. The sooner the psychosis develops after the onset of brucellosis, the greater are its severity and duration.

1/1

Acc. Nr.:

AP0028455

Ref. Code: UR 0246

PRIMARY SOURCE: Zhurnal Nevropatologii i Psikhatrii, 1970,
Vol 70, Nr 1, pp 40-44

CONCERNING THE CLINICAL PICTURE OF CHANGES
IN THE NERVOUS SYSTEM IN TULAREMIA

F. I. Grudev.

During the period of 1948—1962 the authors studied 432 patients with tularemia who displayed diverse mental, neurological and somatic disorders. This paper pertains to some neurological changes of a tularemic etiology: affection of the vegetative nervous system, disorders of the cranial nerves and the sensorial sphere. Meningitis, meningo-encephalitis and encephalitis seen in such cases, as a rule proceeds with psychotic and diffuse neurological symptoms. Among the different neuropsychiatric complications seen in tularemia the main place is occupied by diencephalo-vegetative changes with an expressed algetic syndrome.

REEL/FRAME

19671923

USSR

UDC 616.981.455-06:616.6

GRUDY, P. I., Chair of Psychiatry, Semipalatinsk Medical Institute,
and Chair of Psychiatry, First Moscow Medical Institute named Sechenov

"Neurological Disorders in Tularemia"

Moscow, Zhurnal Nevropatologii i Psikiatrii imeni S. S. Korsakova,
No 1, 1970, pp 40-45

Abstract: The nervous system is affected in all forms of tularemia. General cerebral symptoms set in suddenly, with the elevation of temperature, and include headache, vertigo, nausea, vomiting, ringing in the ears; paresthesia, diaphoresis, insomnia, pain along the nerve trunks and blood vessels, myalgia, asthenia, stupor, apathy, etc. These and many other cerebral and psychoneurological symptoms are generally accompanied by a variety of somatic-autonomic and meningeal disturbances. The initial and severe stage of tularemia is characterized by involvement of the peripheral nervous system, as manifested by neuralgia (especially of the facial nerves), neuritis, oticulitis, polyneuropathy, allergic reactions, and infectious mononucleosis. The neurological disorders are most pronounced and persistent when the infectious process is acute and

USSR

GUDIM, F. I., et al., Moscow, Zhurnal Nevropatologii i Psichiatрии
imeni S. S. Korsakova, No. 1, 1978, pp. 40-45

When the course of the disease is severe and protracted, multiple
lesions of the cranio-cerebral and peripheral nerves are usually
combined with degenerative changes in many of the visceral and
systems, and with more or less pronounced psychotic disorders. In
most of the 432 patients observed from 1948 to 1962, the outcome
of the mental and neurological complications was favorable.

2/2

UDC: 621.317.373.023

USSR

GRUDINA, N. A.

"Measuring Phase Shifts in SHF Radio Pulses"

Dokl. Vses. nauchno-tekhn. konferentsii po radiotekhn. izmereniyam. T. 2 (Reports of the All-Union Scientific and Technical Conference on Radio Engineering Measurements. Vol. 2), Novosibirsk, 1970, pp 82-84 (from RZh-Radiotekhnika, No 12, Dec 70, Abstract No 12A339)

Translation: In the technology of measurements on superhigh frequency, the problem arises of measuring phase displacements within a pulse and from pulse to pulse, where these displacements may be either repeating or nonrepeating. Two methods of measuring such displacements are used in SHF technology: 1) transfer of measurements to a lower intermediate frequency; 2) the interference method of measurement directly on the superhigh frequency. The authors point out the difficulties involved in carrying out the first method. In certain instances it is preferable to make a phase meter which operates directly on the superhigh frequency with the use of phase detection. The requirements for such a phase meter and methods of realization are indicated. Block diagrams are presented and a description is given of the SHF part and the indicator of an instrument for studying the synchronization modes and phase characteristics of oscillators based on semiconductor devices.

1/2

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USSR

GRUDINA, N. A., Dokl. Vses. nauchno-tekhn. konferentsii po radiotekhn. iz-
mereniyam. T. 2, Novosibirsk, 1970, pp 82-84

vices with synchronization by an external signal. Characteristics are given for an experimental model of an instrument which can be used to study and develop solid-state oscillators and to investigate their phase characteristics and the characteristics of other devices which operate in the pulse mode. Bibliography of three titles. E. L.

2/2

1/2 017 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--EFFECT OF THE PHASE DISCRIMINATOR ASYMMETRY ON THE ACCURACY OF
PHASE DIFFERENCE MEASUREMENTS -U-
AUTHOR-(02)-GRUDINA, N.A., ISHCHENKO, V.A.
COUNTRY OF INFO--USSR
SOURCE--RADIOELEKTRONIKA, VOL. 8, MAR. 1970, P. 389-393
DATE PUBLISHED--MAR70
SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR., PHYSICS
TOPIC TAGS--PHASE MEASUREMENT, ERROR ANALYSIS, FREQUENCY DISCRIMINATOR
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--2000/0538 STEP NO--UR/0452/70/006/000/7359/0000
CIRC ACCESSION NO--AP0124233
UNCLASSIFIED

2/2 017

UNCLASSIFIED

PROCESSING DATE--2000CT70

CIRC ACCESSION NO--AP0124233

ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. ANALYSIS OF THE ERRORS ARISING WHEN PHASE DIFFERENCES ARE MEASURED WITH A PHASE DISCRIMINATOR WHOSE BRIDGE CIRCUIT IS ASYMMETRICAL WITH RESPECT TO THE TRANSIENT ATTENUATION EFFECTS. IT IS SHOWN THAT THESE ERRORS ARE POSITIVE WHEN THE REFERENCE PHASE INVERTER IS SET IN SUCH A MANNER THAT THE SIGNAL PHASE DIFFERENCE AT THE PULSE DISCRIMINATOR INPUT IS CLOSE TO ZERO, OR NEGATIVE WHEN THE DIFFERENCE IS CLOSE TO π . PROCEDURES FOR ERROR ELIMINATION ARE DESCRIBED.

UNCLASSIFIED

USSR

UDC 621.391.63

AVTONOMOV, V. A., BORISOV, B. S., GRUDININ, A. S., VARLAMOV, I. V., KANDYBA, Pe, Ye., KOLYASNIKOV, V. A., KRASYUK, B. A., MESKIN, S. S., PETRUSEVICH, V. A., POLTORATSKIY, E. A., RAVICH, V. N., and CHICHERIN, L. A.

"High-Speed Optical-Electronic Switch"

Elektron. tekhnika. Nauch.-tekhn. sb. Mikroelektronika (Electronics Technology. Scientific-Technical Collection. Microelectronics), 1971, Issue 2(28), pp 3-8 (from RZh-Elektronika i yeye primeneniye, No 8, August 1971, Abstract No 8B321)

Translation: An optical-electronic pair is developed, on the basis of which a hybrid microcircuit is produced which assures a high galvanic decoupling and is compatible with respect to the input and output parameters with integrated logic circuits manufactured by domestic industry. 4 ill. 4 ref. Summary.

1/1

USSR

UDC: 681.3.055

~~GRUDININ, M. M.~~ MIZERNYUK, A. T., "Order of Lenin" Institute of Cybernetics, Academy of Sciences of the Ukrainian SSR

"A Device for Scaling and Squaring Pulse Signals"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obratzы, Tovarnyye Znaki, No 9, Mar 72, Author's Certificate No 331385, Division G, filed 22 Sep 70, published 7 Feb 72, p 151

Translation: This Author's Certificate introduces a device for scaling and squaring pulse signals. The device contains an n -place pulse counter whose one-output terminals are connected to the first inputs of the corresponding coincidence circuits. As a distinguishing feature of the patent, the device is designed for improved accuracy in computations. It contains an additional $2n$ -place counter and a delay line with $n+1$ elements. The input of the delay line is connected to the input of the additional pulse counter. The output of the third delay line element is connected to the input of the main pulse counter, the outputs of all elements except the third being connected to the second inputs of the coincidence circuits. The output of the i -th coincidence circuit ($i=0, \dots, n$) is connected to the counting input of the $(i+1)$ -th place of the auxiliary pulse counter.

1/1

USSR

UDC: 621.371:538.569.4

NEDELYAYEV, A. M., GRUDINSKAYA, G. P., BOGOMOLOVA, Ye. V.

"Measuring the Absorption of Ultrashort Waves by Trees"

Tr. Mosk. energ. in-ta (Works of Moscow Power Engineering Institute), 1970, vyp. 119, pp 167-170 (from RZh-Radiotekhnika, No 12, Dec 70, abstract No 12A301 by H. S.)

Translation: An investigation was made of the frequency dependence of absorption of ultrashort waves with normal incidence on the tips of trees. The measurements were made by using various arrangements of felled trees in a special cell to simulate forests of various densities. The measurements showed that trees (birch and spruce) are essentially opaque to decimeter waves; attenuation rises with an increase in working frequency, and is higher for conifers. Attenuation also depends on the season (due to variations in the moisture content of the wood and the thickness of the treetops). One illustration.

1/1

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USSR

UDC: 621.371.332

BOGOMOLOVA, Ye. V., GRUDINSKAYA, G. P.

"Field of a Horizontal Dipole Raised Over Flat Ice-Covered Ground"

Tr. Mosk. energ. in-ta (Works of Moscow Power Engineering Institute), 1972, vyp. 119, pp 104-114 (from RZh-Radiotekhnika, No 12, Dec 72, abstract No 12A302 by H. S.)

Translation: The authors consider the field of a horizontal dipole at some height above a homogeneous layer of finite thickness covering a flat surface. The results are used for calculating the effective coefficients of reflection of separate components of the reflected wave in the case of normal incidence on the surface of ice-covered water. The calculation is done for sea water and fresh water. Three illustrations, bibliography of five titles.

1/1

1/2 020 UNCLASSIFIED PROCESSING DATE--JUDCT70
TITLE--STRUCTURE OF PRODUCTS FROM PENTENE POLYMERIZATION ON A PHOSPHORUS
EATALYST -U-

AUTHOR-(05)-KOLESNIKOVA, T.A., KOLBIN, M.A., KAYUMOV, R.L., KRASNOVA,

~~I.V.~~ GRUDNIKOVA, A.F.

COUNTRY OF INFO--USSR

SOURCE--NEFTEPERERAB. NEFTEKHIM. (MOSCOW) 1970, (1), 27-8

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY, MATERIALS

TOPIC TAGS--AMYLENE, POLYMERIZATION, DIMERIZATION, SYNTHETIC RUBBER,
CHEMICAL PRODUCT PRODUCTION, HYDROGENATION, GAS CHROMATOGRAPHY, HEPTANE,
OCTANE, HEXANE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAE--1997/1766

STEP NO--UR/0318/70/000/001/0027/0028

CIRC ACCESSION NO--AP0120473

UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--30OCT70

2/2 020

CIRC ACCESSION NO--AP0120473

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PREPN. OF ISOPENTENES FOR THE PRODUCTION OF SYNTHETIC RUBBER INVOLVES 2 STEPS: DIMERIZATION OF ISO AND N-C SUB5 FRACTIONS AND DEPOLYMN. TO PURE ISOPENTENES (T. A. KOLESNIKOVA, 1965). THE COMPN. OF DIMER MIXT. IS NOW DETD. THE DEHYDRATION OF ISOAMYL ALCS. OR AMUL ALCS. OVER AL SUB2 O SUB3 CATALYST AT 360DEGREES OR 365DEGREES GAVE 99-99.9PERCENT PURE 1,PENTENE, 2,PENTENE, 2,METHYL,1,BUTENE AND 2,METHYL,2,BUTENE. THE PENTENES WERE DIMERIZED AT 185DEGREES, 50 ATM, AND 1 HR PRIME NEGATIVE SPACE VOL. VELOCITY, VOER H SUB3 PO SUB4 ON SILICA GEL. THE PRODUCTS WERE HYDROGENATED AND ANALYZED BY GAS CHROMATOG. THE HYDROGENATED DIMERS, REGARDLESS OF THE STARTING PENTENE, CONTAINED 30-40PERCENT TRIMETHYLHEPTANES, SIMILAR TO 20PERCENT DIMETHYLOCTANES, SIMILAR TO 20PERCENT TETRAMETHYLHEXANES, AND SIMILAR TO 20PERCENT C SUB8 C SUB9, AND ISO-C SUB10 HYDROCARBONS.

UNCLASSIFIED

USSR

UDC: None

VORONTSOV, V. A., GRUDNISTYY, V. V., KAMENKO, V. P., KOSHELENKO, V. V., REZNICHENKO, Yu. T., and YASILEVICH, E. P.

"Device for Determining the Coordinates of an Aerodynamic Shadow Contour on Bodies of Complex Form in Free Molecular Flux"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, No 27, 1971, p 141, No (11)351113

Abstract: A parallel light beam is used to model the flux such that the model can be fixed in any position. For ease of adjustment, there is a manual indicator showing a thread tied to a movable carriage. The scale of this indicator is used to measure the coordinates of points difficult of access. A diagram of the device is shown.

1/1

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Acc. Nr.: AP0046762

Ref. Code: 480125

USSR

UDC 621.791.75

NINNINGSON, YU. I., SUNYATIN, V. I., GOLENBO, S. B., SLOBIN, B. Z., GRUDO,
A. I., VAYSBURD, I. SH.

"Welding the Frame of the Self-Propelled Chassis T-16M"

Kiev, Avtomaticheskaya Svarka (Automatic Welding), No 1, 1970, pp 44-46
(from Avtomaticheskaya Svarka, No 1, 1970, p 80)

Translation: The results of selecting the technological process for
welding steel 45L with an increased carbon content are discussed. It is
recommended that the welding be performed in two layers without prelimin-
ary heating. There are 3 illustrations.

1/1

di 18

Reel/Frame
19790066

UDC: 517.925.34

USSR

GRUDO, E. I., Institute of Mathematics, Academy of Sciences of the BSSR

"Concerning Solutions of an Autonomous System of Differential Equations
With Zero Roots of the Characteristic Equation"

Minsk, Doklady Akademii Nauk BSSR, Vol 16, No 5, May 72, pp 400-403

Abstract: The author considers the system

$$\frac{dx}{dt} = X(x, y, z), \quad \frac{dy}{dt} = A_1 y + Y(x, y, z), \quad \frac{dz}{dt} = A_2 z + Z(x, y, z); \quad (1)$$

where x and X , y and Y , z and Z are n -, m -, and k -dimensional vector columns respectively; X , Y , and Z being holomorphic with respect to variables x , y , and z and containing no terms of lower than second order in their expansions. It is assumed that the constant $m \times m$ matrix A_1 has eigenvalues $\lambda_1, \dots, \lambda_m$ with negative real parts, whereas the real parts of the eigenvalues of $k \times k$ matrix A_2 are non-negative. Let the system

$$A_1 y + Y(x, y, z) = 0, \quad A_2 z + Z(x, y, z) = 0$$

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USSR

GRUDO, E. I., Doklady Akademii Nauk BSSR, Vol 16, No 5, May 72, pp 400-403

have a solution $y=u(x)$, $z=v(x)$ which is holomorphic with respect to x and equal to zero when $x=0$. In addition, let $X(x, u(x), v(x)) \equiv 0$. Then the substitution

$$y \rightarrow y + u(x), \quad z \rightarrow z + v(x)$$

transforms system (1) to a form for which

$$X(x, 0, 0) \equiv 0, \quad Y(x, 0, 0) \equiv 0, \quad Z(x, 0, 0) \equiv 0. \quad (2)$$

It is assumed that system (1) has property (2). Lyapunov's first method is used to construct an $n+m$ -parametric family of solutions of system (1) which is defined for all $t \geq t_0$ in the neighborhood of $x=0$, $y=0$, $z=0$.

2/2

USSR

UDC 669.721.472(088.8)

ZUYEV, K. M., IVANOV, A. B., VUKOLOV, V. V., SHARUNOVA, G. M., SVALOV, G. N.,
IRTEGOV, N. N., SABUROV, V. F., SECHELKONOGOV, A. A., GRUDOVSKIY, N. P.,
and KISELEV, A. V., All-Union Scientific Research and Design Institute of
Aluminum, Magnesium, and Electrode Industry, Beresnikovskiy Titanium-Magnesium
Combine

"Method of Cutting-Off the Electrolyte Supply of a Production Line Magnesium
Electrolytic Reduction Cell"

USSR Author's Certificate No 260905, filed 21 Oct 68, published 5 May 70
(from RZh-Metallurgiya, No 11, Nov 70, Abstract No 11 G135 P)

Translation: A method is proposed for switching-off the electrolyte supply
to a production line magnesium electrolytic reduction cell for subsequent
diffusion of scum by increasing the temperature of the electrolyte and the
concentration of magnesium chloride. To avert disruption of the operation
of the production line electrolytic reduction cell at the input into the
cathode cell of the electrolytic reduction cell, shields are placed, which
separate the working space of the electrolytic reduction cell from the elec-
trolyte flow in the distribution canal.

1/1

USSR

GRUDTSINA, A. I., MUKHAMETOVA, G. M.

"On the Prophylaxis and Therapy of Gasoline Intoxication"

Tr. Ufimsk. n.-i. in-ta gigiyeny i prof. zabolevaniy (Works of Ufa Scientific Research Institute of Hygiene and Occupational Diseases), 1969, 5, pp 171-176 (from RZh-Biologicheskaya Khimiya, No 20, 1970, Abstract No 20F1834 by N. I. MALAKHOVA)

Translation: The feasibility of using hydroaeroionization and methyl uracil for this purpose is shown.

1/1

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Mechanical Properties

USSR

UDC 539.4.015

YUSHCHENKO, K. A., STARTSEV, V. I., IL'ICHEV, V. Ya., MON'KO, G. G.,
LIVSHITS, L. A., KAPLAN, L. I., STEPANOV, G. A., and GRUDZINSKIY, B. V.,
Kiev, Institute of Electric Welding imeni Ye. O. Paton, Academy of
Sciences, UkrSSR

"Low-Temperature Properties of Austenitic Steels"

Kiev, Problemy Prochnosti, No 10, Oct 70, pp 113-115

Abstract: A study was made of the mechanical properties of some steels of industrial melts destined for use at temperatures down to -269°C . A low carbon content was characteristic for the investigated steels, and some were also alloyed with nitrogen. The 21-16-8-N type stable-austenitic steel had the best strength properties and smallest reduction in plasticity and toughness at reduced temperatures.

1/1

USSR

UDC 669.973:669.14.318.6

STEPANOV, G. A., GRUDZINSKIY, B. V., and SEL'YAMNEVA, I. A.

"Properties of Kh18N10T and Kh21N5AG7 Steels under Load at -196°C "

Moscow, Metallovedeniye i termicheskaya obrabotka metallov, No 6, 1970, pp 13-16

Abstract: The results of an investigation of the properties of Kh18N10T and Kh21N5AG7 steels under prolonged (up to 2000 hours) load at -196°C are presented. Test procedures are briefly described. The mechanical properties are presented in a table. The effect of prolonged loading on the mechanical properties, plastic deformation, and stress relaxation of steels in service was determined. It was established that plastic deformation of Kh21N5AG7 steel during prolonged tests does not increase with time. The relaxation of this steel is substantially higher than that of Kh18N10T steel. Kh21N5AG7 steel appears to be an effective substitute for Kh18N10T steel in structures subjected to negative temperatures, and also has higher strength properties than the latter. Time variations of the plastic deformation of Kh18N10T steel are shown in a graph. 2 figures, 2 references.

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UDC 547.341

USSR

RAZUMOVA, N. A., GRUK, M. P., and PETROV, A. A., Leningrad Technological
Institute imeni Lensovet

"Phosphorus Containing Heterocyclics. Condensation of Glycol and Catechol
Esters of Arylphosphonous Acids With α,β -Unsaturated Ketones"

Leningrad, Zhurnal Obshchey Khimii, Vol 43 (105), No 7, Jul 73, pp 1475-1479

Abstract: Reactions of propyleneglycol and catechol esters of phenyl,
p-tolyl, and p-chlorophenylphosphonous acids with methylvinyl ketone and
mesitylene oxide leads to the formation of products whose structures may
be represented by a resonating system of pentacovalent and ionic forms.
The phosphorus compound in these condensations acts as a nucleophile. The
reactivity of the glycol esters of arylphosphonous acids is 40-50 times as
great as that of the catechol esters.

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USSR

UDC 547.341

RAZUMOVA, N. A., GRUK, M. P., and PETROV, A. A., Leningrad Technological
Institute Imeni Lensovet

"Reaction of Glycol and Pyrocatechol Esters of Phenylphosphonous Acid With
Methyl Vinyl Ketone"

Leningrad, Zhurnal Obshchey Khimii, Vol 42 (104), No 9, Sep 72, p 2114

Abstract: Ethyleneglycol ester of phenylphosphonous acid reacted with methyl
vinyl ketone yields 2-phenyl-(2,2-ethylenedioxy)-5-methyl-1,2-isoxaphospholene,
m.p. 61°. When the pyrocatechol ester was used in this reaction, the product
was 2-phenyl-(2,2-phenylenedioxy)-5-methyl-1,2-isoxaphospholene, b.p. 158-
160°/1 mm. The structures of these products were supported by NMR and IR
spectroscopic data.

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USSR

UDC 547.341

GRUK, M. P., RAZUMOVA, N. A., and PETROV, A. A., Leningrad Technological
Institute Imeni Lensovet

"Condensation of Glycol and Pyrocatechine Esters of Ethylphosphonous Acid
With Methylvinyl Ketone"

Leningrad, Zhurnal Obshchey Khimii, Vol 43 (105), No 4, Apr 73, p 945

Abstract: Glycol and pyrocatechine esters of various arylphosphonous acids react with α,β -unsaturated ketones forming compounds with pentacovalent phosphorus atom. The reactions of ethylphosphonous acid esters are even faster, going to completion in seconds to minutes. Two compounds have been synthesized: 2-ethyl(2,2-ethylenedioxy)-5-methyl-1,2-isoxaphospholanes, b.p. 78-79°/1 mm, d_4^{20} 1.1579, n_D^{20} 1.4870 and 2-ethyl(2,2-phenylenedioxy)-5-methyl-1,2-isoxaphospholene, b.p. 98-99°/1 mm, d_4^{20} 1.2311, n_D^{20} 1.5480.

1/1

USSR

UDC: 51

VOROB'YEV, N. N., GRUND, Yu.

"Model of Competing Prices on a Static Single-Product Market"

V sb. Primeneniye mat. v ekon. (Use of Mathematics in Economics--collection of works), vyp. 7, Leningrad, Leningrad University, 1972, pp 18-35 (from RZh-Kibernetika, No 6, Jun 72, Abstract No 6V383)

Translation: The axiomatic method of analysis is used for studying a static single-product market. The Sheply value vector is considered as a solution. The following cases are examined: 1) each seller has a unit of goods which has a utility c for him, and each buyer is in a position to purchase a unit of goods which has utility d for him; the number of buyers is equal to the number of sellers; 2) as in the first case except that the number of buyers and sellers is different; 3) there are n sellers and r buyers, each seller having a certain quantity of the same infinitely divisible good with inequality of supply and demand; 4) an unbalanced market model where each seller satisfies the overall demand of the buyers; 5) an unbalanced market model with a single seller who satisfies the overall demand of the buyers; 6) an unbalanced market model with a single seller who satisfies the demand of only one buyer. G. Tkachenko.

1/1

USSR

GRUNDSPEN'KIS, Ya. A.

"Application of Certain Concepts of Topology to the Conversion of Complex System Models"

Metody i Modeli Upr. [Methods and Models of Control -- Collection of Works], No 3, Riga, 1972, pp 65-70 (Translated from Referativnyy Zhurnal Kibernetika, No 4, 1973, Abstract No 4V430, by I. Sigal).

Translation: The graph is studied as a model of a complex system; the property of functioning of the system is looked upon as a set of its points, in which the binary relationship is defined. The concepts of the neighborhood of a point, closure of the internal space of the graph and the limiting point for a set of points are introduced, similar to the corresponding concepts of topology. The concepts introduced are used in analysis of problems related to the transition from a rough model to a more detailed model and vice versa. The problem of the transition from a detailed model to a rough model is studied in greater detail. The essence of the approach used is combination of points related by common properties into subsets.

1/1

USSR

GRUNDSPEN'KIS, Ya. A.

"Decomposition and Analysis of the Hierarchical Structure of the Topological Model of a Complex System"

Metody i Modeli Upr. [Methods and Models of Control -- Collection of Works], No 3, Riga, 1972, pp 71-78 (Translated from Referativnyy Zhurnal Kibernetika, No 4, 1973, Abstract No 4V451, by I. Sigal).

Translation: A range of problems is studied, related to decomposition and analysis of topological models of complex systems represented by graphs. The complex structure of these systems makes their analysis by computer more difficult. It is suggested that a model of a system be described by several hierarchical levels. The points characterizing the main functions of the system are called the main functioning cycle, after which subsystems are constructed, providing for the functioning of the main cycle (second level of hierarchy), etc.

1/1

USSR

GRUNDSPEN'KIS, Ya. A.

"Algorithm for Ranking of Cycles in a Topological Model of a Complex System"

Metody i Modeli Upr. [Methods and Models of Control -- Collection of Works],
No 3, Riga, 1972, pp 79-84 (Translated from Referativnyy Zhurnal Kibernetika,
No 4, 1973, Abstract No 4V427, by Ye. Dinitis).

Translation: Earlier works of the author (RZhMat, 1973, 1V886, Abs. 4V431)
were dedicated to construction of graph models of complex systems and problems
of their decomposition and analysis of their hierarchical structure, which was
reduced to study of the cyclical structure of the model. This work describes
an algorithm allowing the hierarchical structure of a system to be determined
from its model.

1/1

USSR

GRUNDSPEN'KIS, Ya. A.

"Topological Model of Functioning of an Internal Combustion Engine"

Kibernetika i Diagnostika [Cybernetics and Diagnosis -- Collection of Works], No 5, Riga, Zinatne Press, 1972, pp 47-53 (Translated from Referativnyy Zhurnal, Kibernetika, No 1, 1973, Abstract No 1 V886 by the author).

Translation: A topological model is composed of the functioning of the internal combustion motor of a ZIL-130 motor vehicle, which is presented as an oriented graph. The possibility is proven of producing a detailed mathematical description of the functioning of the complex system considering all structural peculiarities of the actual motor. 16 Biblio. Refs.

1/1

USSR

UDC 549.212+620.17

PANFEROV, V. M., TARABANOV, A. S., GRUNIN, L. P., and BOBKOVSKIY, V. N.

"Mechanical Properties of Silicized Graphite"

Moscow, Khimiya Tverdogo Topliva, No 4, 1970, pp 147-148

Abstract: A study was made of certain mechanical properties of silicized graphite prepared from dense graphite as starting material. This material had apparent specific gravity of 1.89 g/cm^3 , true specific gravity of 2.10 g/cm^3 , and porosity of 9.8%. Specimens for silicizing were cut along graphite billet rolling axis. In silicized graphite coarse pores with equivalent radii greater than $6 \cdot 10^{-4} \text{ cm}$ were filled with silicon and silicon carbide. The resulting silicized graphite had the following characteristics: density 2.15 g/cm^3 , porosity 3%, SiC content 13-15%, and Si content 1.5-2.3%. The experimental study of mechanical properties was performed on a unique stand developed by the strength department of the Scientific Research Institute of Mechanics at Moscow State University at 20, 600, 1100, 1450, 1650, and 1950° under monoaxial extension conditions. Heating from 20 to 1650° at the rate of 20°/min, exposure for 10 min, and cooling at 1100° at the rate of 20°/min was carried out with a programmed unit. It was found that the test material subjected to preliminary heat rolling became "embrittled." Its maximum failure deformation was lowered, strength was reduced, and the material's modulus of elasticity rose.

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1/2 021 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--PROPER CONTROL OF THE MELTING PERIOD WHEN MAKING STAINLESS STEEL IN
ELECTRIC FURNACES -U-
AUTHOR--(03)-KOCHO, V.S., YEREMIN, V.E., GRUNIN, V.S.
COUNTRY OF INFO--USSR
SOURCE--STAL' 1970, 30(2), 133-4
DATE PUBLISHED-----70
SUBJECT AREAS--MATERIALS, MECH., IND., CIVIL AND MARINE ENGR
TOPIC TAGS--STAINLESS STEEL, ELECTRIC FURNACE, CHROMIUM, SILICON, STEEL
SCRAP
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAHE--1994/1947 STEP NO--UR/0133/70/030/002/0133/0134
CIRC ACCESSION NO--AP0115755
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2/2 021

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0115755

ABSTRACT/EXTRACT--(U) GP-O- ABSTRACT. CR LOSSES WERE STUDIED STATISTICALLY AS A FUNCTION OF THE O VOL. USED FOR BLOWING IN A 50 TON ARC FURNACE REMELTING OF STAINLESS STEEL SCRAP. THE SI II, THE CHARGE SHOULD BE RAISED TO 0.8PERCENT, THE ARC HEAT SUPPLEMENTED WITH A 5-10 MIN MILD O BLOWING, AND STRONG BLOWING STARTED WHEN THE BATH IS AT 1600-1610DEGREES. HEATS MADE IN THIS WAY SHOWED A CR LOSS OF 600-700 KG. FACILITY: KIEV. POLITEKH. INST., KIEV, USSR.

UNCLASSIFIED

USSR

UDC 577.4

GRUNSKIY, I. S.

"Obtaining Special Diagnostic Properties on Introduction of Control Points into an Automaton"

V sb. Tekhn. diagnostika (Technical Diagnostics -- collection of works), Moscow, Nauka Press, 1972, pp 208-211 (from RZh-Kibernetika, No 7, Jul 72, Abstract No 7V364)

No abstract

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USSR

UDC 51:621.391

GRUNSKIY, I. S.

"Orientational Experiment With Arbitrary Automaton"

Kiev, Teor. kibernetika--Sbornik (Theoretical Cybernetics --
Collection of Works), No 4, 1970, pp 43-47 (from Referativnyy
Zhurnal -- Matematika, No 6, June 71, Abstract No 6V423)

Translation: A criterion of existence for a simple, unconditional orientational experiment is obtained for an arbitrary (not necessarily minimum) automaton. The length of the minimum, simple, unconditional orientational experiment, if it exists, is evaluated.

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USSR

UDC 51.621.391

GRUNSKIY, I. S.

"Introduction to the Automata of Test Points in the Recognition of Automata of a Known Class"

Kibernetika [Cybernetics -- Collection of Works], No 1, Kiev, 1970, pp 44-50, (Translated from Referativnyy Zhurnal, Kibernetika, No 10, 1971, Abstract No 10 V615 from the authors introduction).

Translation: It is known that the problem of recognition of an arbitrary automaton from a given class does not always have a solution. Therefore, there is interest in the problem of determination for each automaton of a set of output test points such that any automaton can be recognized in the class of automata with the test points. This work finds conditions under which this problem of finding test points is equivalent to the problem of finding an initial class of test points for the sum of automata, allowing the initial state to be recognized with an accuracy to a coupling component.

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USSR

BOGOMOLOV, A. M., BARASHKO, A. S. and GRUNSKIY, I. S.

"Experiments with Automata"

Eksperimenty s Avtomatami [English version above], Kiev, Nauk. Dumka Press, 1973, 144 pp (Translated from Referativnyy Zhurnal Kibernetika, No 9, 1973, Abstract No 9V437)

Translation: This book presents results produced by the authors recently and related only to certain sections of the theory of experiments with automata. Each of the chapters of the book can be read independently of the other chapters.

The introduction presents the basic concepts from the theory of experiments with automata and reviews the basic results in this area, allowing a general idea to be gained of the contemporary status of this theory.

The first chapter is dedicated to the study of control experiments performed in order to determine the correctness of functioning of an automaton. A class of procedures for construction of experiments with shorter estimates of length than the control experiments studied by Khenni, Kaym and Gonents is differentiated.

In the second chapter, the rules for drawing of conclusions based on the results of unconditional and conditional experiments on the recognition of automata of a known class are formalized and the stability of setting sequences is studied.

USSR

BOGOMOLOV, A. M., BARASHKO, A. S. and GRUNSKIY, I. S., Eksperimenty s Avtomatami, Kiev, Nauk. Dumka press, 1973, 144 pp

Chapter Three studies properties of partial tests used in the recognition of automata of a known class and suggests a method for directed search for partial tests. The fourth chapter is dedicated to the study of the possibility of the use of so-called probability experiments for the testing and diagnoses of an automaton, during which the input sequence is fixed not by the experimenter, but rather by a random signal source with predetermined properties.

Chapter Five studies problems of testing and diagnoses of networks of automata and solves the problem of the determination of the defective component of a network by measurements at the input and output of the network.

Chapter Six is dedicated to the study of methods of conversion of arbitrary automata, which can be interpreted as differentiation of test points for provision of a fixed level of testing and diagnoses.

From the forward

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USSR

UDC 519.1

BOGOMOLOV, A. M., BARASHKO, A. S., and GRUNSKIY, I. S.

"Experiments with Automata"

Kiev, Eksperimenty a avtomatami (cf. English above), "Nauk. dumka", 1973, 144 pp, 11l. 92 k. (from RZh-Matematika, No 9, Sep 73, Abstract No 9V437 K from the foreword)

Ytanslation: The book presents results recently obtained by the authors relating to only a few sections of the theory of experiments with automata. Every chapter in the book can be read independently of the others.

The introduction presents the fundamental concepts of the theory of experiments with automata and gives a survey of the principal results in this field which imparts a general idea of the current state of this theory.

The first chapter investigates control experiments done to determine whether an automaton is in working order. A class of procedures is distinguished for construction of experiments with shorter estimates of length than the control experiments investigated by Hennie, Keim and Gonenz.

The second chapter formalizes the rules for drawing conclusions based on the results of unconditional and conditional experiments on recognizing automata of a certain class, and it investigates the stability of adjustment sequences.

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USSR

BOGOMOLOV, A. M., et al., Eksperimenty s avtomatami, "Nauk. dumka", 1973

The third chapter investigates the properties of partial tests used in recognizing automata of a certain class and suggests a method of directed search for partial tests. The fourth chapter studies the possibility of using so-called probabilistic experiments for checking and diagnosing automata where the input sequence is given by a source of random signals with assigned properties rather than by the experimenter.

The fifth chapter examines questions of checking and diagnosing networks of automata and presents a solution for the problem of determining which component of a network has malfunctioned by measurements at the input and output of the network.

The sixth chapter studies methods of transformation of arbitrary automata, which can be interpreted as isolating control points to ensure a given level of control and diagnosis.

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USSR

UDC 51:621.391

GRUNSKIY, I. S.

"Setting Experiment with an Arbitrary Automaton"

Teor. Kibernetiki. vyp. 4 [Theory of Cybernetics, No 4 -- Collection of Works], Kiev, 1970, pp 43-47, (Translated from Referativnyy Zhurnal, Kibernetika, No 6, 1971, Abstract No 6 V423).

Translation: A criterion is produced for the existence of a simple, unconditional setting experiment for an arbitrary (not necessarily minimal) automaton, and the length of the minimum simple unconditional setting experiment, if such exists, is estimated.

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